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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/537,775	03/29/2000	Minoru Yoshimura	P13998-A	7267

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EXAMINER

TSEGAYE, SABA

ART UNIT	PAPER NUMBER
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2662

DATE MAILED: 08/06/2004

11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/537,775

Applicant(s)

YOSHIMURA, MINORU

Examiner

Saba Tsegaye

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-21 and 23-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-21 and 23-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is in response to the amendment filed 5/25/04. Claims 1-4, 6-21 and 23-30 are pending. Currently no claims are in condition for allowance.

Claim Objections

2. Claim 30 is objected to because of the following informalities: on line 2, the word "wo" is meaningless. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. Claims 1-4, 6-16, 18-21, 23-28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over The Admitted Prior Art (Figs 24-26, pages 1-9) in View of Kuroyanagi et al. (US 6,433,900) and Anderson et al. (US 5,838,924).

Regarding claims 1-4 and 6-9, the Admitted Prior Art discloses, in Figs 24-26, a switch 104; a control section 110; a selector 105; a photocoupler 102a; an optical line terminal 106 has sections of two systems, 0-system transmission/reception section 101a and 1-system transmission/reception section 101b; ONUs 107-1 to 107-n respectively have sections of two systems 103-1a to 103-na and 103-1b to 103-nb; and subscriber terminals 109-1 to 109-n. signals are distributed from the photocoupler 102 to the ONUs 107 through the optical fibers 112 (as in claims 1-4). The one of the ONUs extracts the signal upon determining that the **signal is self-addressed (header value, which contains transmission information and address information through optical fiber)** (claimed outputting by said switch a data cell to one of a

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plurality of ports, to which said first active-system transmission/reception section and said first standby-system transmission/reception section are connected, in accordance with one of a header value added to the data cell). Further, The Admitted Prior Art a protection switching method from a passive optical network system including:

detecting a communication abnormality in at least one **active-system virtual path** established between the optical line terminal and the subscriber terminal through the transmission path and the network unit (page 5, lines 5-14) (as in claims 1, 6-9); and

upon detection of a communication abnormality in the **active-system virtual path**, causing the switch to switch the transmission paths to establish a **standby-system virtual path** between the optical line terminal and the subscriber terminal serving as a communication partner (page 5, line 15-page 6, line 9; and page 7, lines 4-25) (as in claims 1, 6-9).

However, the Admitted Prior Art does not expressly disclose:

(A) to switch only the **abnormal transmission path** to a **normal transmission path** without affecting communication through normal virtual paths in the PON system (as in claims 1, 12); (B) the active virtual path and the standby virtual path in **different bands**; and the second active virtual path; and the second standby virtual path to share a **band assigned** to the first active virtual paths.

(A): Kuroyanagi teaches a redundant configuration only for switching the optical signal of a wavelength in which a fault occurs (column 4, lines 51-65). Fig. 6B shows systems are switched by a selector when a fault occurs on the transmission line (column 9, lines 2-21).

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It would have been obvious to one ordinary skill in the art at the time the invention was made to implement the teaching of Kuroyanagi of switching only the abnormal transmission path in the protection switching method for a PON system of the Admitted Prior Art. One of ordinary skill in the art would motivated to do this because switching only the abnormal transmission path avoids a transmission deterioration such as a signal disconnection caused by the switching of the system of a normal optical signal (or path) will not be generated (column 5, lines 5-10).

(B): Anderson teaches that the protection channel bandwidth is not reserved (different band) and may be shared by several working connections (column 5, lines 22-34).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to use the teachings method from Anderson of using different bands and sharing a band between the active and the standby virtual paths to the method disclosed by the Admitted Prior Art in view of Kuroyanagi. One of ordinary skill in the art would have been motivated to do this because sharing a band optimizes bandwidth conservation.

Regarding claims 10, 12, 15, 16, 19-21 and 23-28, the Admitted Prior Art discloses, in Figs. 25 and 26, an optical line terminal 106 (as in claim 12); a plurality of optical network units 107-1 through 107-n (as in claims 12, 15); selectors 108-1 through 108-n; a switch 104 (as in claim 12); a first control section 110 (as in claims 12, 19, 20); second control sections 111-1 through 111-n (as in claims 12, 21); a plurality of subscribers 109-1 through 109-n (as in claim 12); photocouplers 102a and 102b (as in claim 16); a plurality of active-system **virtual paths**, optical fibers, 112-1a through 112-na (as in claims 12, 15, 19, 28); and a plurality of standby-

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system **virtual paths**, optical fibers, 112-1b through 112-nb (as in claims 12, 15, 19, 28) (pages 2-9). Signals are distributed from the photocoupler 102 to the ONUs 107 through the optical fibers 112. The one of the ONUs extracts the signal upon determining that the **signal is self-addressed (header value, which contains transmission information and address information through optical fiber; as in claim 12)**. Further, the Admitted Prior Art discloses that the 0-system and 1-system are irrelevant to the active and standby systems. The active system is a currently used system, and the standby system is a system that is used upon switching from the active system (as in claim 23).

However, the Admitted Prior Art does not expressly disclose:

(A) to switch only the **abnormal transmission path** to a **normal transmission path** without affecting communication through normal virtual paths in the PON system (as in claims 10, 12); and (B) the active virtual path and the standby virtual path in **different bands** (as in claim 12); and the second active virtual path; and the second standby virtual path to share a **band assigned** to the first active virtual paths (as in claims 12, 23-26).

(A): Kuroyanagi teaches a redundant configuration only for switching the optical signal of a wavelength in which a fault occurs (column 4, lines 51-65). Fig. 6B shows systems are switched by a selector when a fault occurs on the transmission line (column 9, lines 2-21).

It would have been obvious to one ordinary skill in the art at the time the invention was made to implement the teaching of Kuroyanagi of switching only the abnormal transmission path in the protection switching method for a PON system of the Admitted Prior Art. One of ordinary skill in the art would motivated to do this because switching only the abnormal transmission path

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avoids a transmission deterioration such as a signal disconnection caused by the switching of the system of a normal optical signal (or path) will not be generated (column 5, lines 5-10).

(B): Anderson teaches that the protection channel bandwidth is not reserved (different band) and may be shared by several working connections (column 5, lines 22-34).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to use the teachings method from Anderson of using different bands and sharing a band between the active and the standby virtual paths to the method disclosed by the Admitted Prior Art in view of Kuroyanagi. One of ordinary skill in the art would have been motivated to do this because sharing a band optimizes bandwidth conservation.

Regarding claims 13 and 14, the Admitted Prior Art in view of Kuroyanagi discloses all the claim limitations as stated above. Further, the Admitted Prior Art and Kuroyanagi disclose that the transmission path is formed from optical fiber. However, the Admitted Prior Art in view of Kuroyanagi does not expressly disclose the transmission path is formed from a metal line or a coaxial cable. Optical fibers are usually preferred for long transmission distances, exposure to electromagnetic interference, or exposure to conditions of repeated mechanical flexing of the cables. However, the dynamic range provided by conventional optical fiber modulation techniques may not be high enough for analog applications, such as feed links for antenna arrays. Coaxial cables and metal lines provide excellent dynamic range characteristics.

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention was made to substitute a metal line or a coaxial cable to the optical fiber of the

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Admitted Prior Art in view of Kuroyanagi in order to provide an ease of connection to end station.

Regarding claims 18 and 30, the Admitted Prior Art in view of Kuroyanagi discloses all the claim limitations as stated above. Further, the Admitted Prior Art and Kuroyanagi disclose, in Figs. 24-26, a switch 104; photocouplers 102a,b; and a selector 105 selectively switches between the 0-system section 101a and 1-system section 101b. In addition, the transmission /reception sections 101a,b are connected to transmission/reception sections 103a,b through optical fibers 112-1b to 112-nb (as known, optical fiber carries frames, STM singles etc).

However, the Admitted Prior Art in view of Kuroyanagi does not expressly disclose that the switch determines an output port for data in a synchronous transfer mode.

It would have been obvious to one ordinary skill in the art at the time of the invention was made to substitute a switch that determines an output port for data in a synchronous transfer mode to the switch of the Admitted Prior Art. one would have been motivated to do this because it would transmits data in blocks of bits separated by equal time interval that provide synchronization between the transmitter and receiver.

4. Claims 17 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art in view of Kuroyanagi as applied to claims 1-4, 12, 15, 16, 19-21 and 28 above, and further in view of Eng et al. (5,455,701).

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The Admitted Prior Art in view of Kuroyanagi discloses all the claim limitations as stated above except for the switch outputs in accordance with header of an ATM cell and in accordance with a time slot of a frame.

Eng teaches a high-speed asynchronous transfer mode packet switching system. Fig. 2 shows an $N \times M$ optical star coupler based cell distribution network and a plurality of receivers 161-16k. A controller tunes the receivers and it is responsive to header information in the incoming ATM cells (column 3, lines 3-35).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to add a system that the switch outputs in accordance with the value of header of an ATM cell, such as that suggested by Eng, to the PON system of the Admitted Prior Art in order to direct each of the ATM cell inputs to a desired cell distribution network output.

Response to Arguments

5. Applicant's arguments filed 5/25/04 have been fully considered but they are not persuasive. applicant argues (Remarks, page 15) that Kuroyanagi et al. does not disclose a packet switched communication system. Examiner respectfully disagrees with Applicant contention. (1) The rejection is based the combination of the Admitted Prior Art and Kuroyanagi reference. the Admitted Prior Art discloses a packet switched communication system. 2) Both the Admitted Prior Art and Kuroyanagi are directed to optical network communication system. Further, Kuroyanagi teaches that optical signals are transmitted through optical fiber. As known, an optical signal can represents a cell or a frame containing transmission information through optical fibers.

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Still on page 15, Applicant argues that Eng does not teach a “protection switching method for Passive optical network system”. It is respectfully submitted that the rejection is based on the combined teaching of the Admitted Prior Art in View of Kuroyanagi et al. and the Eng reference and that the Admitted Prior Art in View of Kuroyanagi et al, as pointed out above (paragraph 3) does teach this feature.

On page 15-16, Applicant argues that Anderson does not teach “setting an active system virtual path and a standby-system virtual path between the optical line terminal and the subscriber terminal in different bands. It is respectfully submitted that the rejection is based on the combined teaching of the Admitted Prior Art and the Anderson reference and that the Admitted Prior Art discloses, “setting an active system virtual path and a standby-system virtual path between the optical line terminal and the subscriber terminal”. Anderson teaches a protection switching system by employing an active virtual path and protection virtual path. Further, the protection channel bandwidth is not reserved; therefore, the bandwidth can be shared by several working connections. This shows that the bandwidth is distributed as needed and, therefore, the subscriber terminals are in different bands.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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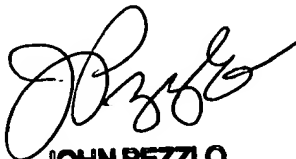
the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saba Tsegaye whose telephone number is (571) 272-3091. The examiner can normally be reached on Monday-Friday (7:30-5:00), First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ST
August 4, 2004


JOHN PEZZLO
PRIMARY EXAMINER